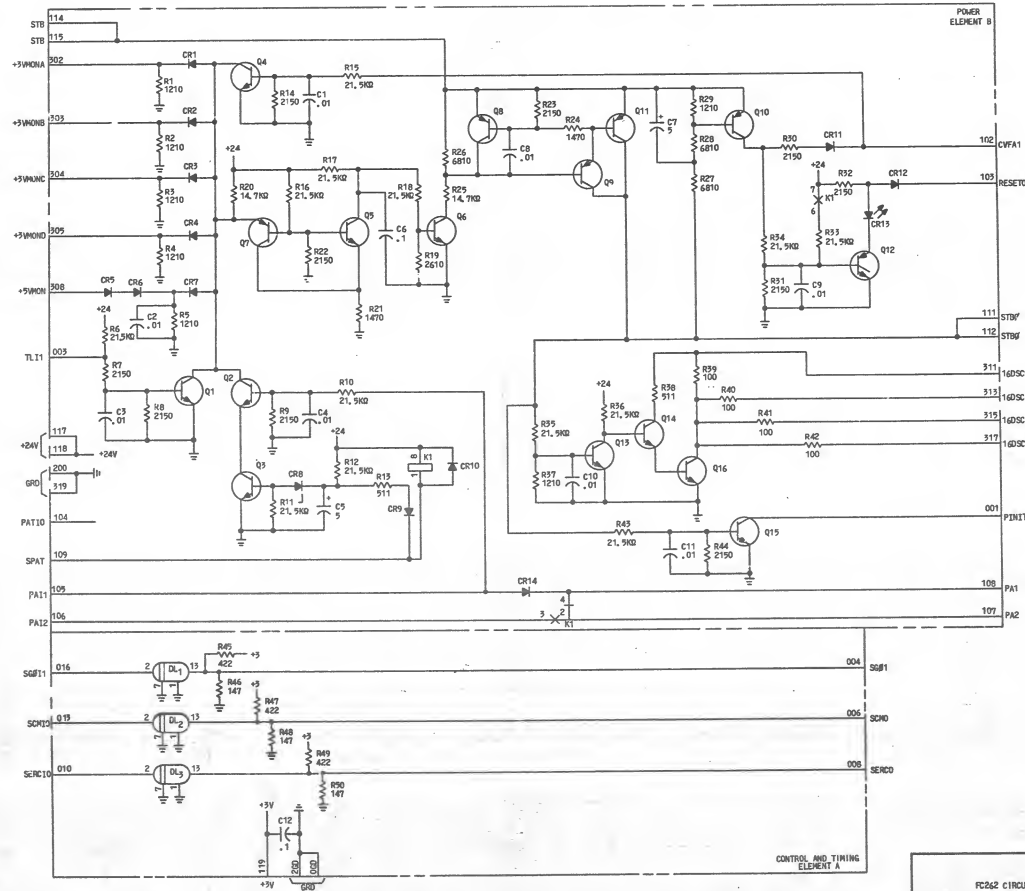


A
B
C
D
E
F
G
H



COMPONENT LIST

CAPACITOR

DESIG	CODE
[4] C1-C4	KS-19774 L2, 01
C5	C21A 1/5
C6	KS-19774 L6, 1
C7	601A 1/5

[4] CB-C11	KS-19774 L2, 01
C12	KS-19774 L6, 1

DELAY LINE

DESIG	CODE
[3] DL-DL5	DY1900 60ns, 1000 ENGINEERING COMPONENTS COMPANY

DIODE

DESIG

CODE

CR1

CR2

CR3

CR4

CR5

CR6

CR7

CR8

CR9

CR10

CR11

CR12

CR13

CR14

RELAY

DESIG

CODE

K1

KS-21490 L1

RESISTOR

DESIG

CODE

[1] R1-R9

[2] R6-R7

[3] R8-R9

[4] R10-R12

[5] R13-R18

[6] R19-R24

[7] R25-R28

[8] R29-R32

[9] R33-R36

[10] R37-R38

[11] R39-R42

[12] R43-R46

[13] R47-R50

[14] R51-R54

[15] R55-R58

[16] R59-R62

[17] R63-R66

[18] R67-R70

[19] R71-R74

[20] R75-R78

[21] R79-R82

[22] R83-R86

[23] R87-R90

[24] R91-R94

[25] R95-R98

[26] R99-R102

[27] R103-R106

[28] R107-R110

[29] R111-R114

[30] R115-R118

COMPONENT LIST (CONT)

TRANSISTOR

DESIG

CODE

Q1

Q2

Q3

Q4

Q5

Q6

Q7

Q8

Q9

Q10

Q11

Q12

Q13

Q14

Q15

Q16

Q17

Q18

Q19

Q20

Q21

Q22

Q23

Q24

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Q26

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Q66

Q67

CIRCUIT DESCRIPTION

A. FUNCTION

THE FC262 CIRCUIT PACK CONTAINS CIRCUITS WHICH MONITOR POWER SUPPLIES, A TERMINATION LOOP, AND THE POWER ALARM (PA) AND FUSE ALARM (FA) TESTS IN THE MAIN STORE. IT ALSO SENSES TROUBLE ON ANY OF THE LEAD IN MONITORS. IT IMMEDIATELY SHUTS OFF ALL J8422A CONVERTERS, GENERATES AN ALARM, AND LIGHTS AN ALARM INDICATOR.

THE FC262 ALSO CONTAINS THREE 60-90 DELAY LINES WHICH ARE USED BY THE POWER PACK. THESE DELAY LINES HAVE NO ASSOCIATION WITH POWER CONTROL, BUT ARE PLACED ON THE FC262 BECAUSE THERE WAS SPARE ROOM.

B. DETAILED DESCRIPTION

THIS PACK MONITORS FOR THE PRESENCE OF +3 V FROM EACH OF THE FOUR J8422B CONVERTERS IN THE MAIN STORE CONTROLLER AND FOR THE PRESENCE OF +5 V. A WATCH IS USED TO TERMINATE THE SIGNAL LINES BETWEEN THE MAIN STORE CONTROLLER (MASC) AND ALL MAIN STORE HANDLES (MASC). IF ANY OF THESE VOLTAGES ARE MISSING, THE FC262 CAUSES POWER TO THE MEMORY PLACES TO BE REDUCED TO PREVENT DAMAGE. THESE VOLTAGES MUST BE MONITORED DIRECTLY RATHER THAN RELY ON THE PA NETWORK, BECAUSE THE CONVERTERS MAY NOT BE PLUGGED INTO THEIR CONNECTORS WHEN POWER IS APPLIED AND HENCE WILL NOT GENERATE A POWER ALARM.

THE PRESENCE OF ALL THE TERMINATION PADDS BOARDS IS CHECKED BY SENSING THE INTEGRITY OF A GROUND WHICH LOOPS THROUGH ALL PADDS BOARDS. AGAIN, POWER TO THE MEMORY PLACES IS SHUTDOWN IF THIS GROUND IS NOT PRESENT ON LEAD TL1.

THE FC262 ALSO MONITORS FOR POWER ALARMS FROM ALL THE J8422A CONVERTERS, AND FOR FUSE ALARMS FROM ANY CONVERTER IN THE PROCESSOR FRAME. IF THE CIRCUIT SENSES AN ALARM, IT SHUTS OFF POWER TO THE J8422B CONVERTERS TO PREVENT POSSIBLE DAMAGE TO THE MEMORY PLACES.

POWER TO THE MEMORIES IS SUPPLIED BY J8422B CONVERTERS, WHICH ARE CONTROLLED BY LEAD ST89 FROM THE FC262. WHEN J8422B'S ARE TO BE STARTED, LEAD ST89 IS PULLED UP TO +24V. FOR TROUBLE SHUTDOWN, LEAD ST89 IS OPENED, ITS VOLTAGE DROPS TO GROUND, AND ALL J8422B'S TURN OFF. WHEN LEAD ST89 IS OPENED AND THE J8422B'S TURN OFF.

DURING THE TIME THE J8422B'S ARE OFF, LEAD FN111 IS OPEN, WHICH CAUSES THE MASC TO BE IN THE POWER INITIALIZE STATE. FOR NORMAL OPERATION, LEAD FN111 IS GROUNDING.

A TROUBLE SHUTDOWN CAUSES THE LIGHT EMITTING DIODE (LED) INDICATOR TO TURN ON AND THE PACK TO SEND OUT A FUSE ALARM. THE LED IS TURNED OFF AFTER +24 V IS REMOVED FROM LEAD ST89 AND WHEN LEAD RESET IS MONITORIALLY GROUNDING BY THE PA NET.

THE PA NET FOR THE PROCESSOR FRAME IS DIVIDED INTO TWO SEPARATE LOOPS: AN INTERNAL LOOP (PA1 PA12) WHICH MONITORS ALL THE J8422A CONVERTERS PLUS THE J8422B CONVERTER WHICH IS USED FOR TERMINATIONS; AND AN EXTERNAL LOOP (PA1 PA2), WHICH MONITORS ALL OTHER CONVERTERS. DURING A PA TEST, A RELAY ON THE FC262 CONNECTS THESE TWO PA LOOPS IN SERIES TO SIMULTANEOUSLY TEST THE INTEGRITY OF THE PA TEST. BEGINS WHEN LEAD SPAT IS GROUNDING AND RELAY K1 CONNECTS THE TWO PA LOOPS IN SERIES. THE LIGHTS LEAD TO SHOW THAT K1 HAS OPERATED CORRECTLY. A GROUND ON SPAT ALSO DISABLES THE PA MONITORING CIRCUIT ON THIS PACK, SO THAT IT DOES NOT FAULTS SHUT DOWN POWER DURING THIS TEST.

CIRCUIT DESCRIPTION (CONT)

AT THE END OF THE PA TEST, LEAD SPRT IS OPENED AND THE RELAY IS RELEASED, BUT THE PA MONITOR CIRCUIT IS HELD INACTIVE FOR AT LEAST AN ADDITIONAL 90 MS BY A TIMING CIRCUIT TO ALLOW THE PA LOOP TO RETURN TO THE NO-ALARM STATE. WHEN THE RELAY RELEASES, THE INTERNAL AND EXTERNAL PA LOOPS ARE ISOLATED BY RELAY CONTACT 3 AND BY DIODE CR14. THE PA MONITOR IS THEN SENSITIVE ONLY TO A POWER ALARM ON THE INTERNAL PA LOOP. THE LED IS TURNED OFF AT THE END OF THE PA TEST BY A MONITORING GROUND ON LEAD RESET.

ALL LOW MONITOR LEADS ARE BUFFERED AGAINST HIGH FREQUENCY NOISE BY 0.01 μ F CAPACITORS ON THEIR INPUTS. CAPACITOR CA INTRODUCES ENOUGH DELAY TO PREVENT A FALSE OPENING OF LEAD ST89 FOR TRANSITS OF 1 NS OR LESS. CAPACITOR CT ASSURES THAT TRANSITS OF 6 NS OR LESS WILL NOT CAUSE THE FC262 TO GENERATE A FUSE ALARM.

THE THREE DELAY LINES WITH RESISTOR TERMINATIONS EACH RELAY STORE CONTROL SIGNALS ARE USED TO ASSURE THAT OTHER STORE BUS LEADS ARE VALID.

C. SYMBOL/LEAD MEMPHONICS

MEMPHONIC DEFINITION

CVFA1	CONVERTER FUSE ALARM - HIGH MEANS ALARM AND FC262 OPENS LEAD ST89.
GRD	GROUND
PA1	POWER ALARM, INTERNAL NET - HIGH MEANS ALARM AND FC262 OPENS LEAD ST89.
PA12	POWER ALARM, INTERNAL NET - HIGH MEANS ALARM AND FC262 OPENS LEAD ST89 IF PA1 AND PA12 ARE COINCIDENT.
PA10	POWER ALARM TEST - THIS LEAD NOT USED BY FC262.
PA1	POWER ALARM, EXTERNAL NET - HIGH MEANS ALARM, BUT FC262 DOES NOT TAKE ANY ACTIONS.
PA2	POWER ALARM, EXTERNAL NET - HIGH MEANS ALARM, BUT FC262 DOES NOT TAKE ANY ACTIONS.
FN111	POWER INITIALIZE - AN OPEN KEEPS MASC IN INITIALIZE STATE.
RESET	RESET FOR LED - GROUND EXTINGUISHES LAMP.
SCND	STORE COMPLETE INPUT
SCND	STORE COMPLETE OUTPUT
SECRD	STORE ERROR C INPUT
SECRD	STORE ERROR C OUTPUT
SG61	STORE GO INPUT
SG61	STORE GO OUTPUT
SPAT	SPECIAL POWER ALARM TEST - GROUND BEGINS TEST
ST89	START B - HIGH SUPPLIES +24 V START POWER TO FC262.
ST89	START B OUTPUT - HIGH SUPPLIES +24 V START POWER TO ALL J8422B'S.
TL1	TERMINATION LOOP MONITOR - NORMALLY GROUND, OPEN MEANS TROUBLE CONDITION AND FC262 OPENS LEAD ST89.
160SCND	160SCND
160SCND	160SCND
160SCND	160SCND
+24V	24-VOLT INPUT POWER.
+3V	3-VOLT INPUT POWER.
+3VHNA	3-VOLT MONITOR A - LOW MEANS TROUBLE CONDITION.
+3VHNB	3-VOLT MONITOR B - LOW MEANS TROUBLE CONDITION.
+3VHNC	3-VOLT MONITOR C - LOW MEANS TROUBLE CONDITION.
+3VHND	3-VOLT MONITOR D - LOW MEANS TROUBLE CONDITION.
+3VHNE	3-VOLT MONITOR E - LOW MEANS TROUBLE CONDITION.

FC262 CIRCUIT PACK

BELL TELEPHONE LABORATORIES
INCORPORATED

CPS-FC262

SHEET 3

6S

2A